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**Serial Number: 10/812,732** 

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## PALM INTRANET

Day : Thursday Date: 5/4/2006 Time: 15:47:27

Inventer Name CHO; RICHARD C.	Env.	Sunior addicases = 1
ELLSWORTH, MICHAEL J. JR.	LAGRANGEVILLE	NEW YORK
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US 20060084374 A1	US- PGPUB	20060420	11	Method and apparatus for a low impedance anti-recirculation air moving inlet device	454/184		Cruz; Ethan E. et al.
US 20060065874 A1	US- PGPUB	20060330	19	Isolation valve and coolant connect/disconnect assemblies and methods of fabrication for interfacing a liquid cooled electronics subsystem and an electronics housing	251/348	251/904	Campbell; Levi A. et al.
US 20060042289 A1	US- PGPUB	20060302		Cooling system and method employing auxiliary thermal capacitor unit for facilitating continuous operation of an electronics rack	62/259.2	62/434	Campbell; Levi A. et al.
US 20060002088 A1	US- PGPUB	20060105	32	Apparatus and methods for microchannel cooling of semiconductor integrated circuit packages	361/702		Bezama; Raschid Jose et al.
US 20060002087 A1	US- PGPUB	20060105	26	Apparatus and methods for microchannel cooling of semiconductor integrated circuit packages	361/699		Bezama; Raschid Jose et al.
US 20050286234 A1	US- PGPUB	20051229	14	Thermally conductive composite interface and methods of fabrication thereof for an electronic assembly	361/719		Campbell, Levi A. et al.
US 20050281000 A1	US- PGPUB	20051222	10	Thermal dissipation structure and method employing segmented heat sink surface coupling to an electronic component	361/704		Chu, Richard C. et al.
US 20050280993 A1	US- PGPUB	20051222		Electronic device cooling assembly and method employing elastic support material holding a plurality of thermally conductive pins	361/699		Campbell, Levi A. et al.

US 20050280140 A1	US- PGPUB	20051222	11	Packaging for enhanced thermal and structural performance of electronic chip modules	257/706	257/713; 438/125	Corbin, John S. JR. et al.
US 20050248922 A1	US- PGPUB	20051110		COOLING ASSEMBLY FOR ELECTRONICS DRAWER USING PASSIVE FLUID LOOP AND AIR- COOLED COVER	361/700		Chu, Richard C. et al.
US 20050248921 A1	US- PGPUB	20051110	9	Method and apparatus for sealing a liquid cooled electronic device	361/698		Schmidt, Roger R. et al.
US 20050247433 A1	US- PGPUB	20051110		METHOD AND APPARATUS FOR COOLING ELECTRONIC COMPONENTS	165/80.4		Corrado, Joseph P. et al.
US 20050237716 A1	US- PGPUB	20051027		Air flow system and method for facilitating cooling of stacked electronics components	361/696		Chu, Richard C. et al.
US 20050217299 A1	US- PGPUB	20051006		Condensate removal system and method for facilitating cooling of an electronics system	62/259.2	62/272; 62/285	Chu, Richard C. et al.
US 20050205240 A1	US- PGPUB	20050922		Finned heat sink	165/80.3	257/E23.102; 257/E23.103; 257/E23.107	Ellsworth, Michael J. JR. et al.
US 20050167085 A1	US- PGPUB	20050804		Graphite-based heat sinks and method and apparatus for the manufacture thereof	165/80.3	257/E23.103; 257/E23.11	Chu, Richard C. et al.
US 20050167084 A1	US- PGPUB	20050804		Graphite-based heat sinks and method and apparatus for the manufacture thereof	165/80.3	257/E23.103; 257/E23.11	Chu, Richard C. et al.
US 20050162833 A1	US- PGPUB	20050728		Transpiration cooled heat sink and a self contained coolant supply for same	361/700	257/E23.088; 257/E23.098	Chu, Richard C. et al.
US 20050128705 A1	US- PGPUB	20050616		Composite cold plate assembly	361/699	257/E23.098; 361/689	Chu, Richard C. et al.
US 20050126747 A1	US- PGPUB	20050616		Method, system and program product for automatically checking	165/11.1		Chu, Richard C. et al.

US	US-	20050616	coolant loops of a cooling system for a computing environment	72/140		Cl. Pill
20050126276 A1	PGPUB	20030616	Method, system and program product for monitoring rate of volume change of coolant within a cooling system	73/149		Chu, Richard C. et al.
US 20050122685 A1	US- PGPUB	20050609	Cooling system and method employing multiple dedicated coolant conditioning units for cooling multiple electronics subsystems	361/699	174/15.4; 361/689; 361/701	Chu, Richard C. et al.
US 20050122684 A1	US- PGPUB	20050609	Cooling system and method employing at least two modular cooling units for ensuring cooling of multiple electronics subsystems	361/698	361/699	Chu, Richard C. et al.
US 20050078453 A1	US- PGPUB	20050414	Thermal spreader using thermal conduits	361/709	257/E23.09; 257/E23.11; 428/408	Chu, Richard C. et al.
US 20050068728 A1	US- PGPUB	20050331	Thermal dissipation assembly and fabrication method for electronics drawer of a multiple-drawer electronics rack	361/690	361/687	Chu, Richard C. et al.
US 20040190247 A1	US- PGPUB	20040930	Method for combined air and liquid cooling of stacked electronics components	361/696		Chu, Richard C. et al.
US 20040134646 A1	US- PGPUB	20040715	Graphite-based heat sinks and method and apparatus for the manufacture thereof	165/185	165/80.3; 257/722; 257/E23.103; 257/E23.11; 361/704	Chu, Richard C. et al.
US 20040100770 A1	US- PGPUB	20040527	METHOD AND APPARATUS FOR COMBINED AIR AND LIQUID COOLING OF STACKED ELECTRONICS COMPONENTS	361/698	454/184; 62/259.2	Chu, Richard C. et al.

US 20040095721 A1	US- PGPUB	20040520	Frame level partial cooling boost for drawer and/or node level processors	361/694	165/80.4; 257/E23.099; 361/699	Ellsworth, Michael J. JR. et al.
US 20040085732 A1	US- PGPUB	20040506	STACKABLE LIQUID COOLING PUMP	361/696		Cox, William E. et al.
US 20040050231 A1	US- PGPUB	20040318	SCALABLE COOLANT CONDITIONING UNIT WITH INTEGRAL PLATE HEAT EXCHANGER/EXPA NSION TANK AND METHOD OF USE	83/574	30/317; 361/699; 83/614	Chu, Richard C. et al.
US 20040012914 A1	US- PGPUB	20040122	Electronic device substrate assembly with multilayer impermeable barrier and method of making	361/679	257/E23.002; 257/E23.087; 257/E23.092; 257/E23.094; 257/E23.098; 257/E23.125	Chu, Richard C. et al.
US 20040001310 A1	US- PGPUB	20040101	LIQUID-TO-AIR COOLING SYSTEM FOR PORTABLE ELECTRONIC AND COMPUTER DEVICES	361/687	165/104.33; 174/15.2; 361/699	Chu, Richard C. et al.
US 20030221816 A1	US- PGPUB	20031204	Finned heat sink	165/80.3	165/185; 257/E23.102; 257/E23.103; 257/E23.107	Ellsworth, Michael J. JR. et al.
US 20030205363 A1	US- PGPUB	20031106	Enhanced air cooling of electronic devices using fluid phase change heat transfer	165/80.3	165/104.33; 257/715; 361/700	Chu, Richard C. et al.
US 20030203181 A1	US- PGPUB	20031030	Interstitial material with enhanced thermal conductance for semiconductor device packaging	428/307.3	257/E23.089; 257/E23.102; 428/319.1; 428/319.3; 428/913	Ellsworth, Michael J. JR. et al.
US 20030188538 A1	US- PGPUB	20031009	Two stage cooling system employing thermoelectric modules	62/3.2	257/E23.098; 62/259.2; 62/332	Chu, Richard C. et al.
US 20030178190 A1	US- PGPUB	20030925	Foil heat sink and a method for fabricating same	165/185	257/E23.103	Ellsworth, Michael J. JR. et al.
US 20030122245 A1	US- PGPUB	20030703	Electronic module with integrated programmable	257/706	136/203; 257/930; 257/E23.08;	Chu, Richard C. et al.

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			thermoelectric cooling assembly and method of fabrication		257/E23.082	
US 20030090872 A1	US- PGPUB	20030515	ELECTRONIC DEVICE SUBSTRATE ASSEMBLY WITH IMPERMEABLE BARRIER AND METHOD OF MAKING	361/699	257/714; 257/E23.181; 361/719	Chu, Richard C. et al.
US 20030060108 A1	US- PGPUB	20030327	Thermal spreader using thermal conduits	442/149	257/E23.09; 257/E23.11	Chu, Richard C. et al.
US 20030056940 A1	US- PGPUB	20030327	Transpiration cooled heat sink and a self contained coolant supply for same	165/104.26	165/104.33; 257/715; 257/E23.088; 257/E23.098; 361/700	Chu, Richard C. et al.
US 20030056939 A1	US- PGPUB	20030327	Integrated cooling unit	165/80.4	165/121; 257/E23.098	Chu, Richard C. et al.
US 20030011987 A1	US- PGPUB	20030116	CONIC-SECTIONED PLATE AND JET NOZZLE ASSEMBLY FOR USE IN COOLING AN ELECTRONIC MODULE, AND METHODS OF FABRICATION THEREOF	361/690	257/E23.1	Chu, Richard C. et al.
US 20030011983 A1	US- PGPUB	20030116	Cooling system for portable electronic and computer devices	361/687		Chu, Richard C. et al.
US 20030011394 A1	US- PGPUB	20030116	Self-aligning wafer burn-in probe	324/761	324/758	Notohardjono, Budy D. et al.
US 20020137369 A1	US- PGPUB	20020926	Land grid array (LGA) module assembly that maximizes substrate area for electronic devices	439/77		Edwards, David Linn et al.
US 20020117741 A1	US- PGPUB	20020829	HIGH BANDWIDTH 3D MEMORY PACKAGING TECHNIQUE	257/686	257/E23.172; 257/E23.174; 257/E25.011	Beausoleil, William F. et al.
US 20020116933 A1	US- PGPUB	20020829	Recuperative environmental conditioning unit	62/93	62/259.2; 62/3.4	Chu, Richard C. et al.

US 20020092594 A1	US- PGPUB	20020718	Fixture for securing hard stops to a substrate	156/64		Barringer, Dennis et al.
US 20020079117 A1	US- PGPUB	20020627	Capping structure for electronics package undergoing compressive socket actuation	174/52.1	257/E23.078	Coffin, Jeffrey T. et al.
US 20020079088 A1	US- PGPUB	20020627	CAVITY PLATE AND JET NOZZLE ASSEMBLIES FOR USE IN COOLING AN ELECTRONIC MODULE, AND METHODS OF FABRICATION THEREOF	165/80.4	257/E23.1	Agonafer, Dereje et al.
US 20020063327 A1	US- PGPUB	20020530	Electronic module with integrated programmable thermoelectric cooling assembly and method of fabrication	257/706	136/201; 136/203; 136/293; 219/121.69; 257/707; 257/712; 257/718; 257/719; 257/E23.08; 257/E23.082; 438/117; 438/122; 438/125	Chu, Richard C. et al.
US 20020062855 A1	US- PGPUB	20020530	Electronic module with integrated thermoelectric cooling assembly	136/230	136/203; 136/242; 257/E23.082	Chu, Richard C. et al.
US 20010050567 A1	US- PGPUB	20011213	Segmented architecture for wafer test & burn-in	324/754		Bachelder, Thomas W. et al.
US 20010006101 A1	US- PGPUB	20010705	Extended air cooling with heat loop for dense or compact configurations of electronic components	165/80.3	257/715; 257/E23.099; 361/700	Chu, Richard C. et al.
US 20010000880 A1	US- PGPUB	20010510	Supplemental heating for variable load evaporative cold plates	165/263	165/264; 165/63; 165/64; 257/E23.081; 62/259.2; 62/509	Chu, Richard C. et al.
US 7012807	USPAT	20060314	Thermal dissipation	361/699	165/104.33;	Chu; Richard

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			electronics drawer of a multiple-drawer		361/727	
			electronics rack			
US 7011143	USPAT	20060314	Method and apparatus	165/80.4	165/104.33;	Corrado;
B2			for cooling electronic		165/292;	Joseph P. et al.
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US 7000467	USPAT	20060221	Method, system and	73/299	361/702 73/49.2	Chu; Richard
B2	USIAI	20000221	program product for	131299	73/49.2	C. et al.
			monitoring rate of			o. c. un.
		İ	volume change of			
			coolant within a			
US 6973801	USPAT	20051213	cooling system	(2/250.2	165/104 20	
B1	USPAI	20051213	Cooling system and method employing a	62/259.2	165/104.32; 165/80.3;	Campbell; Levi A. et al.
			closed loop coolant		361/698	A. ct al.
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			cooling structure within			
			an electronics			
			subsystem of an electronics rack			
US 6970355	USPAT	20051129	Frame level partial	361/694	165/122;	Ellsworth, Jr.;
B2			cooling boost for		165/80.3;	Michael J. et al.
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			level processors		174/15.1;	:
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					454/184;	
US 6967841	USPAT	20051122	Cooling assembly for	261/700	62/259.2	Chan Diet 1
B1	USPAI	20031122	Cooling assembly for electronics drawer	361/700	165/104.17; 165/80.4;	Chu; Richard C. et al.
5.			using passive fluid loop		174/15.1;	C. et al.
			and air-cooled cover		174/15.2;	
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					361/695; 361/699	
US 6940712	USPAT	20050906	Electronic device	361/679	165/104.33;	Chu; Richard
B2			substrate assembly with	33.,3,7	165/80.3;	C. et al.
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			impermeable barrier		257/E23.087;	
			and method of making		257/E23.092;	
					257/E23.094; 257/E23.098;	
					257/E23.098, 257/E23.125;	

					261/710	T
US 6924981 B2	USPAT	20050802	Method for combined air and liquid cooling of stacked electronics components	361/696	361/719 165/104.33; 361/687; 361/695; 361/697; 454/184	Chu; Richard C. et al.
US 6907917 B2	USPAT	20050621	Graphite-based heat sinks and method and apparatus for the manufacture thereof	165/80.3	165/185; 257/E23.103; 257/E23.11; 361/704	Chu; Richard C. et al.
US 6821625 B2	USPAT	20041123	Thermal spreader using thermal conduits	428/408	174/16.3; 257/E23.09; 257/E23.11; 361/704; 361/707; 361/709	Chu; Richard C. et al.
US 6820684 B1	USPAT	20041123	Cooling system and cooled electronics assembly employing partially liquid filled thermal spreader	165/104.33	165/104.21; 165/80.3; 174/15.2; 174/16.3; 257/715; 257/E23.088; 361/700	Chu; Richard C. et al.
US 6819563 B1	USPAT	20041116	Method and system for cooling electronics racks using pre-cooled air	361/696	165/104.33; 165/80.3; 174/16.1; 361/690; 361/694; 361/695; 454/184	Chu; Richard C. et al.
US 6804966 B1	USPAT	20041019	Thermal dissipation assembly employing thermoelectric module with multiple arrays of thermoelectric elements of different densities	62/3.7	257/E23.082; 257/E23.094; 361/687; 361/688; 62/259.2	Chu; Richard C. et al.
US 6788085 B2	USPAT	20040907	Self-aligning wafer burn-in probe	324/761	324/754; 324/762	Notohardjono; Budy D. et al.
US 6775137 B2	USPAT	20040810	Method and apparatus for combined air and liquid cooling of stacked electronics components	361/696	165/120; 312/223.2; 361/687; 361/692; 361/695	Chu; Richard C. et al.
US 6767766 B2	USPAT	20040727	Electronic module with integrated programmable thermoelectric cooling assembly and method of fabrication	438/122	257/E23.08; 257/E23.082; 438/125	Chu; Richard C. et al.

US 6754076 B2	USPAT	20040622	Stackable liquid cooling pump	361/699	165/80.4; 174/15.1; 361/701; 361/702; 415/172.1; 415/199.4; 415/199.5; 415/200; 415/215.1	Cox; William E. et al.
US 6714412 B1	USPAT	20040330	Scalable coolant conditioning unit with integral plate heat exchanger/expansion tank and method of use	361/699	165/104.33; 165/157; 165/80.4; 361/701; 361/831; 62/259.2	Chu; Richard C. et al.
US 6705089 B2	USPAT	20040316	Two stage cooling system employing thermoelectric modules	62/3.2	136/204; 165/104.33; 257/E23.098; 361/697; 62/259.2	Chu; Richard C. et al.
US 6684501 B2	USPAT	20040203	Foil heat sink and a method for fabricating same	29/890.03	165/185; 165/80.3; 174/16.3; 257/722; 257/E23.103; 361/704	Ellsworth, Jr.; Michael J. et al.
US 6674642 B1	USPAT	20040106	Liquid-to-air cooling system for portable electronic and computer devices	361/687	165/80.4; 361/715; 62/259.2	Chu; Richard C. et al.
US 6650538 B1	USPAT	20031118	Fin heat sink and airflow tube assembly employing annular airflows, and methods of fabrication thereof	361/688	165/121; 165/185; 165/80.3; 257/722; 257/E23.099; 361/694; 361/695; 361/703	Chu; Richard C. et al.
US 6639803 B1	USPAT	20031028	Compliant heat sink device/mounting system interconnect and a method of implementing same	361/719	165/185; 165/80.3; 174/16.3; 257/E23.084; 257/E23.103; 361/704; 361/707; 361/709	Corrado; Joseph P. et al.
US 6591898 B1	USPAT	20030715	Integrated heat sink system for a closed electronics container	165/80.4	165/104.33; 257/E23.098; 361/698; 361/702;	Chu; Richard C. et al.

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US 6587345 B2	USPAT	20030701	Electronic device substrate assembly with impermeable barrier and method of making	361/719	361/711 165/80.3; 257/E23.181; 29/890.03	Chu; Richard C. et al.
US 6587336 B2	USPAT	20030701	Cooling system for portable electronic and computer devices	361/687	361/688; 361/689	Chu; Richard C. et al.
US 6557354 B1	USPAT	20030506	Thermoelectric- enhanced heat exchanger	62/3.2	62/259.2; 62/3.6; 62/3.7; 62/332; 62/333	Chu; Richard C. et al.
US 6548894 B2	USPAT	20030415	Electronic module with integrated programmable thermoelectric cooling assembly and method of fabrication	257/706	136/203; 257/E23.08; 257/E23.082	Chu; Richard C. et al.
US 6519151 B2	USPAT	20030211	Conic-sectioned plate and jet nozzle assembly for use in cooling an electronic module, and methods of fabrication thereof	361/699	165/80.4; 165/908; 257/E23.1; 361/702	Chu; Richard C. et al.
US 6511574 B2	USPAT	20030128	Fixture for securing hard stops to a substrate	156/295	156/304.3; 156/305; 156/538; 156/556; 269/287; 269/289R; 269/303; 269/903	Barringer; Dennis et al.
US 6499717 B1	USPAT	20021231	System and method of use for a refrigerant quick-connect coupling	251/142	137/599.02; 251/145; 251/209; 251/345; 62/292	Porter; Donald W. et al.
US 6496001 B1	USPAT	20021217	System and method for probe mechanism planarization	324/158.1	324/754	Barringer; Dennis et al.
US 6490874 B2	USPAT	20021210	Recuperative environmental conditioning unit	62/93	62/271	Chu; Richard C. et al.
US 6489551 B2	USPAT	20021203	Electronic module with integrated thermoelectric cooling assembly	136/230	136/242; 257/930; 257/E23.082; 62/3.3	Chu; Richard C. et al.
US 6449162 B1	USPAT	20020910	Removable land grid array cooling solution	361/719	257/719; 257/E23.084; 361/715;	Corbin, Jr.; John S. et al.

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US 6431260 B1	USPAT	20020813	Cavity plate and jet nozzle assemblies for use in cooling an electronic module, and methods of fabrication thereof	165/80.4	165/908; 257/714; 257/E23.1; 361/699	Agonafer; Dereje et al.
US 6424533 B1	USPAT	20020723	Thermoelectric- enhanced heat spreader for heat generating component of an electronic device	361/719	257/930; 257/E23.082; 257/E23.09; 29/890.03; 361/704; 62/3.7	Chu; Richard C. et al.
US 6397618 B1	USPAT	20020604	Cooling system with auxiliary thermal buffer unit for cooling an electronics module	62/259.2	165/104.22; 257/E23.088	Chu; Richard C. et al.
US 6396700 B1	USPAT	20020528	Thermal spreader and interface assembly for heat generating component of an electronic device	361/705	165/185; 165/80.3; 174/16.3; 257/707; 257/713; 257/E23.08; 257/E23.102; 361/690; 361/718; 361/722	Chu; Richard C. et al.□
US 6366462 B1	USPAT	20020402	Electronic module with integral refrigerant evaporator assembly and control system therefore	361/699	165/80.4; 165/908; 257/714	Chu; Richard C. et al.
US 6337794 B1	USPAT	20020108	Isothermal heat sink with tiered cooling channels	361/690	174/259; 361/687; 361/692; 361/735; 361/752	Agonafer; Dereje et al.
US 6301109 B1	USPAT	20011009	Isothermal heat sink with cross-flow openings between channels	361/690	165/165; 165/170; 257/714; 257/E23.098; 361/699; 361/700; 361/711; 62/259.2	Chu; Richard C. et al.
US 6301097 B1	USPAT	20011009	Inflatable sealing system for low temperature electronic module	361/679	165/46; 174/17.05; 174/52.4; 257/E23.098	Ellsworth, Jr.; Michael J. et al.

US 6275051 B1	USPAT	20010814	Segmented architecture for wafer test and burn-in	324/754	324/765	Bachelder; Thomas W. et al.
US 6265887 B1	USPAT	20010724	Mounting fixture for a pin grid array device	324/755	206/728; 324/158.1; 324/756; 53/390	Barringer; Dennis R. et al.
US 6262582 B1	USPAT	20010717	Mechanical fixture for holding electronic devices under test showing adjustments in multiple degrees of freedom	324/755	269/254CS; 269/289R; 269/50; 269/900; 269/903	Barringer; Dennis R. et al.
US 6255832 B1	USPAT	20010703	Flexible wafer level probe	324/754		Notohardjono; Budy Darmono et al.
US 6253835 B1	USPAT	20010703	Isothermal heat sink with converging, diverging channels	165/80.4	165/104.33; 165/185; 174/15.1; 257/714; 257/E23.098; 361/699; 361/701; 361/702	Chu; Richard C. et al.
US 6246581 B1	USPAT	20010612	Heated PCB interconnect for cooled IC chip modules	361/700	165/104.21; 165/104.33; 257/713; 257/715; 257/E23.065; 257/E23.081; 361/699; 361/702; 361/704; 361/719	Kang; Sukhvinder et al.
US 6243268 B1	USPAT	20010605	Cooled IC chip modules with an insulated circuit board	361/715	165/104.21; 174/16.3; 257/713; 257/E23.098; 361/711; 361/717; 361/743; 62/259.2	Kang; Sukhvinder et al.
US 6233960 B1	USPAT	20010522	Spot cooling evaporator cooling system for integrated circuit chip modules	62/259.2	257/E23.096; 62/3.2; 62/3.7	Kang; Sukhvinder et al.
US 6233959 B1	USPAT	20010522	Dehumidified cooling assembly for IC chip modules	62/259.2	257/E23.096; 62/3.2; 62/3.4; 62/92	Kang; Sukhvinder et al.
US 6223813	USPAT	20010501	Ultra high-density,	165/185	165/80.3;	Chrysler;

BI			high-performance heat sink		174/16.3; 257/722; 257/E23.105; 29/890.03; 361/703	Gregory Martin et al.
US 6223810 B1	USPAT	20010501	Extended air cooling with heat loop for dense or compact configurations of electronic components	165/104.33	165/104.26; 257/715; 257/E23.099; 361/700	Chu; Richard C. et al.
US 6213194 B1	USPAT	20010410	Hybrid cooling system for electronics module	165/80.3	165/80.4; 257/714; 257/722; 361/696; 361/697; 62/259.2	Chrysler; Gregory M. et al.
US 6205796 B1	USPAT	20010327	Sub-dew point cooling of electronic systems	62/94	361/700; 62/259.2	Chu; Richard C. et al.
US 6173759 B1	USPAT	20010116	Method of cooling electronic devices using a tube in plate heat sink	165/80.4	165/146; 165/168; 257/E23.098; 361/699; 361/719	Galyon; George Tipton et al.
US 6164076 A	USPAT	20001226	Thermoelectric cooling assembly with thermal space transformer interposed between cascaded thermoelectric stages for improved thermal performance	62/3.7	62/259.2	Chu; Richard C. et al.
US 6144013 A	USPAT	20001107	Local humidity control system for low temperature electronic module	219/209	392/416	Chu; Richard C. et al.
US 6125036 A	USPAT	20000926	Moisture barrier seals for cooled IC chip module assemblies	361/700	165/80.4; 165/80.5; 174/15.1; 174/15.2; 257/714; 257/715; 257/E23.084; 257/E23.098; 361/699; 361/701; 361/705; 361/708; 361/719	Kang; Sukhvinder et al.
US 6122926 A	USPAT	20000926	Low thermal conductance insulated	62/259.2	257/E23.088; 62/272;	Kang; Sukhvinder et

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			cooling assembly for IC chip modules		62/273	al.
US 6058010 A	USPAT	20000502	Enhanced test head liquid cooled cold plate	361/689	165/80.4; 174/15.1; 174/15.2; 361/699; 361/700; 361/704; 361/707; 361/719	Schmidt; Roger R. et al.
US 6035655 A	USPAT	20000314	Modular refrigeration system	62/259.2	62/196.4	Hare; Jeffrey J. et al.
US 6034872 A	USPAT	20000307	Cooling computer systems	361/699	165/165; 165/170; 361/735; 62/259.2	Chrysler; Gregory M. et al.
US 6023410 A	USPAT	20000208	Extended cooling for portable computers	361/681	361/687; 361/690; 361/707	Chu; Richard C. et al.
US 6018458 A	USPAT	20000125	Constant impedance air baffle for cooling of electronic card assemblies	361/690	165/80.3; 312/223.2; 361/687; 361/692; 361/695; 361/720	Delia; David J. et al.
US 5970731 A	USPAT	19991026	Modular refrigeration system	62/196.4	62/228.4	Hare; Jeffrey J. et al.
US 5963425 A	USPAT	19991005	Combined air and refrigeration cooling for computer systems	361/695	165/104.33; 165/80.4; 174/15.1; 361/699; 454/186; 62/259.2	Chrysler; Gregory M. et al.
US 5954127 A	USPAT	19990921	Cold plate for dual refrigeration system	165/170	165/164; 165/165; 361/700; 62/259.2	Chrysler; Gregory M. et al.
US 5953930 A	USPAT	19990921	Evaporator for use in an extended air cooling system for electronic components	62/259.2	165/104.21; 165/104.33; 257/E23.088; 361/700	Chu; Richard C. et al.
US 5934364 A	USPAT	19990810	Cold plate for dual refrigeration systems	165/170	165/164; 165/80.2	Chrysler; Gregory M et al.
US 5926368 A	USPAT	19990720	Enhanced air cooling system with attached cooling unit	361/695		Chrysler; Gregory Martin et al.
US 5896922 A	USPAT	19990427	Cold plate for dual refrigeration systems	165/165	165/146; 165/170; 62/259.2	Chrysler; Gregory M. et al.

US 5826643 A	USPAT	19981027	Method of cooling electronic devices using a tube in plate heat sink	165/80.4	165/146; 165/168; 257/E23.098; 361/699; 361/719	Galyon; George Tipton et al.
US 5825620 A	USPAT	19981020	Enhanced air cooling system with attached cooling unit	361/695	301713	Chrysler; Gregory Martin et al.
US 5812372 A	USPAT	19980922	Tube in plate heat sink	361/699	165/80.4; 174/15.1; 257/714	Galyon; George Tipton et al.
US 5794454 A	USPAT	19980818	Cooling device for hard to access non-coplanar circuit chips	62/259.2	165/104.21; 165/104.33; 257/E23.088; 257/E23.103; 361/700	Harris; Willard Stephen et al.
US 5761037 A	USPAT	19980602	Orientation independent evaporator	361/700	165/104.26; 165/80.4; 257/E23.088; 62/259.2	Anderson; Timothy Merrill et al.
US 5758418 A	USPAT	19980602	Method of making an ultra high-density, high-performance heat sink	29/890.03	257/E23.105; 29/890.054	Chrysler; Gregory Martin et al.
US 5743794 A	USPAT	19980428	Method for field upgrading of air cooling capacity	454/184	361/695	Chrysler; Gregory Martin et al.
US 5719745 A	USPAT	19980217	Extended surface cooling for chip stack applications	361/704	174/16.3; 257/722; 257/E25.013; 361/710	Agonafer; Dereje et al.
US 5704419 A	USPAT	19980106	Air flow distribution in integrated circuit spot coolers	165/121	165/80.3; 257/E23.099; 361/697	Agonafer; Dereje et al.
US 5699853 A	USPAT	19971223	Combined heat sink and sink plate	165/104.21	165/104.33; 165/185; 257/E23.088; 361/700	Goth; Gary Franklin et al.
US 5615084 A	USPAT	19970325	Enhanced flow distributor for integrated circuit spot coolers	361/697	165/121; 165/80.3; 257/E23.099; 361/719; 415/178; 415/213.1	Anderson; Timothy M. et al.
US 5609202 A	USPAT	19970311	Enhanced flow distributor for integrated circuit spot coolers	165/80.3	165/122; 165/124; 165/126; 165/185; 165/96; 174/16.3;	Anderson; Timothy M. et al.

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					257/E23.099;	
					361/697	
US 5609201	USPAT	19970311	Enhanced flow	165/80.3	165/122;	Anderson;
A	OSIAI	19970311	distributor for	103/80.3	165/124;	Timothy M. et
Α.			integrated circuit spot		165/126;	al.
			coolers		165/185;	ai.
			Coolers		165/96;	
					174/16.3;	
					257/722;	
					257/E23.099;	
					361/697	
US 5604665	USPAT	19970218	Multiple parallel	361/703	165/908;	Chrysler;
Α			impingement flow		257/722;	Gregory M. et
			cooling with tuning		361/719	al.
US 5482113	USPAT	19960109	Convertible heat	165/137	165/122;	Agonafer;
Α			exchanger for air or		165/157 <sup>°</sup>	Dereje et al.
			water cooling of	· ·		
			electronic circuit			
			components and the			
,			like			
US 5456081	USPAT	19951010	Thermoelectric cooling	62/3.7	136/204;	Chrysler;
Α			assembly with		165/185;	Gregory M. et
			optimized fin structure		165/80.2;	al.
			for improved thermal		257/E23.082;	
			performance and		62/259.2	
US 5437328	USPAT	19950801	manufacturability Multi-stage heat sink	165/146	165/105.	Simone Dahan
A	USFAI	19930001	With stage heat sink	103/140	165/185; 257/E23.099;	Simons; Robert E.
Α					257/E23.103;	E.
					361/692	
US 5412536	USPAT	19950502	Local condensation	361/700	165/104.26;	Anderson;
Α			control for liquid		165/80.5;	Timothy M. et
			impingement two-		174/15.2;	al.
			phase cooling		257/715;	
					257/E23.088	
US 5394299	USPAT	19950228	Topology matched	361/705	165/79;	Chu; Richard
Α			conduction cooling		165/80.4;	C. et al.
			module		257/707;	
					257/719;	
					257/E23.094;	
					257/E23.1;	
		1			361/699;	
HC 5270170	LICDAT	10041206	Commentible 11:	165/127	361/719	
US 5370178	USPAT	19941206	Convertible cooling	165/137	165/185;	Agonafer;
A			module for air or water cooling of electronic		165/80.3;	Dereje et al.
			circuit components		165/80.4; 257/E23.098;	
			circuit components		257/E23.098; 257/E23.099;	
					361/697;	
					301/09/;	<u> </u>

					361/699; 361/703	
US 5335143 A	USPAT	19940802	Disk augmented heat transfer system	361/694	165/122; 257/706; 257/707; 361/784	Maling, Jr.; George C. et al.
US 5269372 A	USPAT	19931214	Intersecting flow network for a cold plate cooling system	165/80.4	165/185; 257/714; 257/E23.098; 361/699	Chu; Richard C. et al.
US 5228502 A	USPAT	19930720	Cooling by use of multiple parallel convective surfaces	165/80.4	165/142; 165/908; 257/714; 257/E23.093; 257/E23.094; 361/689	Chu; Richard C. et al.
US 5170319 A	USPAT	19921208	Enhanced multichip module cooling with thermally optimized pistons and closely coupled convective cooling channels	361/689	165/170; 165/80.3; 257/714; 257/E23.094; 257/E23.098; 361/699	Chao-Fan Chu; Richard et al.
US 5168348 A	USPAT	19921201	Impingment cooled compliant heat sink	257/713	257/714; 257/E23.093; 257/E23.094; 257/E23.102; 257/E23.103; 257/E23.105; 361/704	Chu; Richard C. et al.
US 5161089 A	USPAT	19921103	Enhanced multichip module cooling with thermally optimized pistons and closely coupled convective cooling channels, and methods of manufacturing the same	361/703	165/185; 165/80.4; 257/712; 257/E23.094; 257/E23.098; 361/699; 361/707	Chu; Richard C. et al.
US 5097385 A	USPAT	19920317	Super-position cooling	361/703	165/104.33; 165/80.4; 174/16.3; 257/E23.093; 257/E23.094; 257/E23.096; 361/699	Chao-Fan Chu; Richard et al.
US 4928207 A	USPAT	19900522	Circuit module with direct liquid cooling by a coolant flowing between a heat producing component	361/700	257/E23.088; 257/E23.093; 257/E23.094; 361/703	Chrysler; Gregory et al.

		·	and the face of a piston			
US 4765400 A US 4765397 A	USPAT	19880823 19880823	Circuit module with pins conducting heat from floating plate contacting heat producing device  Immersion cooled circuit module with	165/185 165/104.33	257/713; 257/714; 257/720; 257/722; 257/E23.094; 361/689 165/146; 165/80.3;	Chu; Richard C. et al. Chrysler; Gregory M. et
			improved fins		165/80.4; 165/903; 257/E23.098; 361/699; 361/703	al.
US 4757370 A	USPAT	19880712	Circuit package cooling technique with liquid film spreading downward across package surface without separation	257/715	257/E23.088	Agonafer; Dereje et al.
US 4709754 A	USPAT	19871201	Heat transfer element with nucleate boiling surface and bimetallic fin formed from element	165/133	165/80.4	Chu; Richard C. et al.
US 4638858 A	USPAT	19870127	Composite heat transfer device with pins having wings alternately oriented for up-down flow	165/185	165/184	Chu; Richard C.
US 4235494 A	USPAT	19801125	Data processor enclosure with tambour door	312/297	160/25	Chu; Richard C. et al.
US 4233644 A	USPAT	19801111	Dual-pull air cooling for a computer frame	361/687	174/16.3; 361/697	Hwang; Un- Pah et al.
US 4226281 A	USPAT	19801007	Thermal conduction module	165/80.2	165/185; 165/80.4; 257/697; 257/713; 257/714; 257/719; 257/E23.094; 257/E23.098; 361/715	Chu; Richard C.
US 4193445 A	USPAT	19800318	Conduction cooled module	165/79	165/185; 165/80.3; 165/80.4; 257/E23.094; 257/E23.098; 361/706	Chu; Richard C. et al.

US 4167771 A	USPAT	19790911	Thermal interface adapter for a conduction cooling module	361/715	165/185; 165/80.2; 174/16.3; 257/714; 257/718; 257/720; 257/E23.094; 257/E23.107; 361/688	Simons; Robert E.
US 4156458 A	USPAT	19790529	Flexible thermal connector for enhancing conduction cooling	165/81	165/185; 165/DIG.51; 257/682; 257/714; 257/718; 257/E23.094; 257/E23.103; 428/573; 428/596	Chu; Richard C. et al.
US 4050507 A	USPAT	19770927	Method for customizing nucleate boiling heat transfer from electronic units immersed in dielectric coolant	165/96	165/133; 165/911; 219/121.18; 219/121.23; 219/121.26; 219/121.69; 219/121.7; 219/121.71; 219/121.83; 219/121.85; 257/715; 257/E23.088; 62/527	Chu; Richard C. et al.
US 3993123 A	USPAT	19761123	Gas encapsulated cooling module	165/80.3	165/104.33; 165/80.4; 257/697; 257/714; 257/720; 257/E23.094; 257/E23.095; 257/E23.11; 361/703	Chu; Richard C. et al.
US 3741292 A	USPAT	19730626	LIQUID ENCAPSULATED AIR COOLED MODULE	165/104.21	165/104.33; 257/715; 257/722; 257/724; 257/E23.088; 361/698	Aakalu; Nanda Kumar G. et al.

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US 3586101 A	USPAT	19710622	COOLING SYSTEM FOR DATA PROCESSING EQUIPMENT	165/101	165/104.25; 174/15.1; 257/715; 257/722; 257/E23.088; 62/333	Chu; Richard C. et al.
US 3524497 A	USPAT	19700818	HEAT TRANSFER IN A LIQUID COOLING SYSTEM [TEXT AVAILABLE IN USOCR DATABASE]	165/80.4	165/104.33; 165/166; 165/185; 165/903; 174/15.1; 257/714; 257/E23.098; 361/699	CHU RICHARD C et al.
US 3512582 A	USPAT	19700519	IMMERSION COOLING SYSTEM FOR MODULARLY PACKAGED COMPONENTS [TEXT AVAILABLE IN USOCR DATABASE]	165/104.27	165/138; 165/76; 174/15.1; 257/715; 257/E23.088; 361/700	CHU RICHARD C et al.
US 3481393 A	USPAT	19691202	MODULAR COOLING SYSTEM [TEXT AVAILABLE IN USOCR DATABASE]	165/80.4	165/104.31; 165/104.33; 257/714; 257/E23.098; 361/699; 62/3.2	CHU RICHARD C
US 3328643 A	USPAT	19670627	Cooling device for electronic components [TEXT AVAILABLE IN USOCR DATABASE]	361/710	165/67; 165/80.3; 257/E23.086; 361/717	CHU RICHARD C et al.
US 3317798 A	USPAT	19670502	Cooling electrical apparatus [TEXT AVAILABLE IN USOCR DATABASE]	361/696	165/122; 165/80.3; 165/80.4; 361/701; 361/724; 361/796	CHU RICHARD C et al.
US 3247896 A	USPAT	19660426	Component heat removal device [TEXT AVAILABLE IN USOCR DATABASE]	165/80.3	165/185; 257/718; 257/722; 257/E23.086; 361/690	CHU RICHARD C et al.

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